- **Title:** The Ghost-Roll Flexi-Screen (Multiverse Edition) - Technical Specification
- **Identifier:** meta-guinea-ghost-roll-multiverse-spec
- **Creator:** Martin Savale
- **Subject/Tags:** UK Patents Act 1977, Prior Art, SMA Tensioning, FOLED, Multiverse Edition, Meta Guinea Ghost, Smart Stadium, Birds-I-View

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The Ghost-Roll Flexi-Screen (Multiverse Edition)

Proprietor: Martin Savale

Entity: Meta Guinea Ghost Ltd (Technology Spinoff)

Conception Date: October 2024

Filing Date: January 8, 2026

Jurisdiction: Patents Act 1977 (UK) / International Prior Art

System Data Arbitrator: Dragon Chip Ghost Amp (360Hz Synchronization)

I. CORE TECHNOLOGY: SMA EDGE TENSIONING

To eliminate mechanical fatigue and "surface-wave" distortion in rollable FOLEDs, this system utilizes **Shape-Memory Alloy (SMA)** perimeter strips (Nitinol NiTi).

- **The Mechanism:** Upon deployment command from the **Dragon Chip**, a precision current pulse (2.5A at 3.2V) heats the SMA strips to 65°C.
- The Physics: This generates a contraction force of 15N per linear meter, calculated by:

  $$T_{edge} = (E \cdot t \cdot \delta) / L$$

  (Where E is Young's Modulus [2.5 GPa], t is substrate thickness [125µm], and δ is target flatness [0.2mm])
- **Result:** A glass-flat, rigid surface capable of supporting pedestrian load (300kg/m²) while maintaining AR fidelity.

II. AQUASHELL RUGGEDIZATION (IP67)

- **Hermetic Sealing:** Multi-layer **Thin-Film Encapsulation (TFE)** with aluminum oxide (Al_2O_3) moisture barriers.
- **Surface Treatment:** Hydrophobic **Atomic Layer Deposition (ALD)**; water, mud, and debris repel instantly for self-cleaning functionality.
- **Optics:** 2,500 nits peak brightness with a **395nm UV-blocking layer** to protect organic blue pixels from sunlight degradation during permanent outdoor installation.

III. DEPLOYMENT & ECOSYSTEM INTEGRATION

The system executes a 3.7-second "Unfurling Sequence" coordinated by the **Birds-I-View App**:

1. **Stage 1:** Geofence/timer signal (50m range) triggers the **Dragon Chip**.
2. **Stage 2:** Dual NEMA 23 stepper motors initiate controlled unroll (3.2s).
3. **Stage 3:** SMA current pulse engages (800ms), locking the screen into a rigid state.
4. **Stage 4: Dragon Chip** initiates 360Hz refresh-rate handshake with **HAWK AI Scout** and **Pulse Button** for environmental sync.

IV. MULTIVERSE APPLICATIONS (ENVIRONMENT-ON-DEMAND)

- **Stadium-on-Demand:** Instant digital overlays for **Football, Basketball, Tennis, and Baseball**. Pitch lines and textures switch via app in <4 seconds.
- **The "Digital Red Carpet":** High-durability floor-screen for celebrity events, rendering luxury textures (Marble, Gold, Velvet) that react to footsteps via haptic-spatial sync.
- **Chameleon High-Street:** Modular waterproof "wallpaper" for truck exteriors and pop-up retail fronts, allowing branding to shift by the hour.

V. DEFENSIVE PRIOR ART CLAIMS

This document establishes Prior Art for:

1. A rollable FOLED display using **SMA (Nitinol) tensioning** for active surface stabilization and flatness control.
2. An IP67-rated flexible display incorporating UV-blocking and hydrophobic layers for permanent outdoor floor/infrastructure application.
3. A "Pre-Entry" environment-skinning protocol controlled by a 360Hz Data

Arbitrator (**Dragon Chip**) and a mobile orchestration layer (**Birds-I-View App**).

VI. ALTERNATIVE EMBODIMENTS

Claims extend to:

- **Tensioning:** Piezoelectric actuators, electrostatic surface attraction, or motorized edge rollers.
- **Display:** MicroLED flexible arrays, E-ink architectural surfaces, or transparent LCD overlays.
- **Form Factors:** Automotive dash/headliners, marine vessel decking, and aerospace cabin surfaces.